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Editorial

The risk of infective endocarditis in the 21st century

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Infective endocarditis (IE) for decades has been an elusive and fatal disease without proper recognition and early treatment. In the past half century, diagnostic imaging, especially in echocardiography, the possibility of antibiotic therapy and cardiac surgery during the active infectious process has played a critical role in the management of this disease. In the 19th century, William Osler defined the disease as possible to treat this disease, and now in the 21st century, endocarditis is a clinical definable and treatable disease.

Prevention strategies have not lowered the incidence of this life-threatening disease.[1–4] These studies provide the basis for recent guidelines from the ESC/AHA/ACC,[5,6] to provide a stringent approach towards prevention strategies. Despite improvements in the diagnostic and therapeutic strategies, the fatality rate due to IE has not significantly decreased since the end of the 1970s. The changing epidemiology related to this disease contributes to the ongoing elusiveness of endocarditis.

Series of case reports published in this issue of Indian Heart Journal demonstrate the complexity of this disease, the most frequent causative agents now tend to be aggressive pathogens such as staphylococci, resistant-enterococci, or fungi.[7,8,9] In this series of reports there are the usual aggressive pathogens and also the new genus *Granulicatella*, as *Granulicatella adiacens* a gastrointestinal (GI) flora causing endocarditis in the patient with rheumatic mitral valve disease. The challenge in the 21st century is stringent criteria for prophylaxis, the aggressive pathogens, antibiotic resistance and the growing number of medical devices implanted in the heart.

The case report of endocarditis late in the course of an Amplatzer implantation highlights the need for vigilance in the device patient population. The current prophylaxis guidelines recommend 6 months until re-endothelization of the device is complete. However, in this case the patient's device was implanted years prior to the diagnosis of the endocarditis. Even though this is the third case reported, it highlights again the risk for this type of latent infection in patients with device implantations. A recent case report from Turkey illustrates the low, but persistent risk of endocarditis in patients with ICD-pacemaker implants.[10] As the technology develops including closure devices, pacemaker-ICD and TAVR, the possibility for device related infections is real and there is a need for high suspicion in patients with fever, sepsis, or other clinical features of endocarditis. These patients need to be screened with transthoracic echocardiogram (TTE) and if negative and suspicion is high, then transesophageal echocardiogram (TEE) should be performed.

The risk of this disease in the 21st century is dependent on clinical acumen including the identification of patients at risk i.e. devices, congenital heart lesions, underlying native valve disease including rheumatic heart disease, calcific aortic stenosis and mitral valve prolapse, IV drug abuse, and recent dental/GI/GU manipulation. The clinical symptoms of fever, anemia, splenomegaly, Osler nodes and Janeway lesions, although not seen in early clinical presentations, are still the mainstay of the clinical exam for identifying this disease.

Diagnostic imaging first using TTE is the cornerstone for this disease classification. Surveillance blood cultures before, during and after therapy, and follow-up echo is standard. Finally, if the TTE is negative, but clinical suspicion is high then TEE is the gold standard for the diagnosis of this disease. Table 1, indicates the devices which are emerging as the potential for endocarditis. Clinical suspicion for patients with these devices that present with fever, sepsis and/or nonspecific flu like symptoms must alert the physician to the possibility of endocarditis.

In the 21st century, efforts should be made to develop new strategies at each step of IE management to reduce the residual causes of IE-related deaths. The possibility of developing new

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Table 1 – Medical devices at risk for infective endocarditis.

Medical device therapy: risk factors for endocarditis
Prosthetic heart valves
Annuloplasty rings
TAVR
Mitral valve clips
Pacemaker
ICD
Amplatzer closure device

serum markers to diagnose this disease, and identifying epidemiologic risk factors for patients at risk are also studies under intense investigation across the world. Currently, the challenges in IE management include (i) cost-effective measures of prevention, (ii) improvement of diagnostic strategies to reduce the delays for the initiation of the appropriate treatment, (iii) and better identification of patients who require close monitoring and urgent surgery.[11]

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